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A plea for reporting the major and minor axes of the aortic bifurcation

The size of the aortic bifurcation has been implicated in the etiology of endograft limb occlusion.[1-3] This is not surprising. The two limbs of a bifurcated device must traverse the aortic terminus in a side-by-side configuration. Vascular surgeons accustomed to open surgical repair of aortic aneurysms are familiar with the often heavily calcified, irregular, and sometimes tightly stenotic aortic bifurcation.

Despite the implications of a tight aortic bifurcation, there is no standardized method to measure or express its size. Unlike most arterial segments, the distal aortic lumen is often elliptic rather than circular, even on multiplanar reformatting of imaging studies (Fig 1). Which axis is more important to measure, or should both be recorded? Should dimensions be expressed with the luminal or the aortic wall-to-wall dimensions?

The critical issue is whether the two endograft limbs will traverse the aortic terminus without compromise. Assuming that, for the most part, aortic luminal thrombus is incompressible, the luminal dimensions are most pertinent. Accepting the assumption that limbs can self-orient to a side-by-side configuration, the major axis should be at least the sum of the outer diameters of the two limbs and the minor diameter should be equal to or greater than the outer diameter of the largest limb (Fig 2). Although still overly simplistic, standardized reporting of the major and minor axes of the aortic bifurcation may provide information with important clinical decision-making implications. Reporting both dimensions should be considered in future clinical trials of endovascular aneurysm repair.

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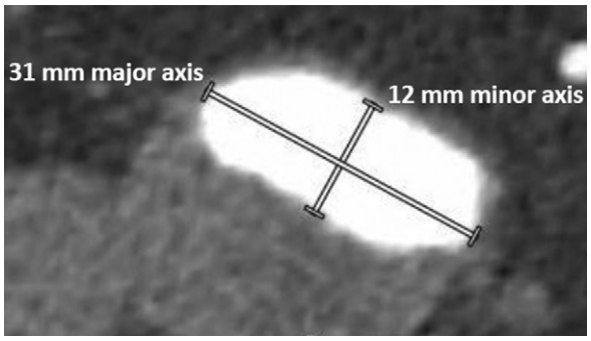

Fig 1. Elliptic configuration of aortic lumen just proximal to the bifurcation. Original computed tomographic image kindly provided by Imagine-SCT, division of Pharmakon SA, Luxemburg.

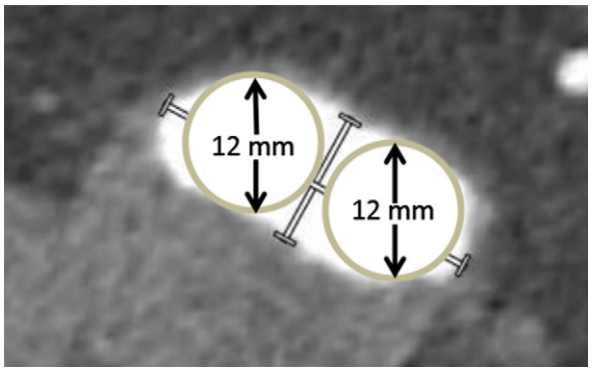

Fig 2. Theoretic side-by-side configuration of 12-mm iliac limbs. Original computed tomographic image kindly provided by Imagine-SCT, division of Pharmakon SA, Luxemburg.

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